

FACT SHEET FOR NPDES PERMIT NO. WA0024350

Westside Water Reclamation Facility

City of Vancouver

Clark County

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INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES), which is administered by the Environmental Protection Agency (EPA). The EPA has delegated responsibility to administer the NPDES permit program to the state of Washington on the basis of Chapter 90.48 Revised Code of Washington (RCW) which defines the Department of Ecology's (Department) authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the state include procedures for issuing permits [Chapter 173-220 Washington Administrative Code (WAC)], technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see Appendix A--Public Involvement of the fact sheet for more detail on the Public Notice procedures).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix F--Response to Comments.

GENERAL INFORMATION

Applicant:	City of Vancouver
Facility Name and Address:	Vancouver Westside Wastewater Treatment Plant 1800 Kotobuki Way Vancouver, WA 98661
Type of Treatment:	Industrial Pretreatment Lagoon, Secondary Activated Sludge, UV Disinfection, Sludge incineration.
Discharge Location:	Columbia River Latitude: 45° 38' 10" N. Longitude: 122° 41' 45" W.
Water Body ID Number:	WA-CR-1010, at approximately River Mile 105.

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

HISTORY

The Westside Treatment Plant began operation in 1974, and underwent a major upgrade in 1986. The facility has just completed another significant upgrade increasing capacity from 15.2 MGD (dry weather maximum monthly average and loading basis) to 28.26 MGD (maximum monthly average flow and loading basis). See table 2 for more precise tabulation of design standards.

COLLECTION SYSTEM STATUS

The City of Vancouver's (City) collection system is a conventional, separate sanitary, gravity sewer system divided into three sections. These sections are termed the Westside Basin, Eastside Basin, and Diversion Basin. While the Eastside Basin must flow to the Marine Park facility, and the Westside Basin must flow to the Westside Treatment Plant, flows from the roughly equal sized Diversion Basin may be divided between the two Treatment Plants based upon relative treatment capacities. Flows from the Diversion Basin are either conveyed to the Westside facility via the Burnt Bridge Creek interceptor or to the Marine Park WRF via the Burnt Bridge Creek Diversion Pump Station. The Southside interceptor carries the primary and secondary solids from the Marine Park facility to the Westside Water Reclamation Facility. The Westside facility also receives flows from a domestic septage receiving station.

Inflow and Infiltration (I&I) to the Westside Treatment Plant has not been excessive. According to the City's report of May 18, 1998, for 1997, I&I was 0.45 MGD per inch of rain at this facility, and 0.1 MGD per inch of rain at the Marine Park facility. Using a gallons/inch/mile standard, the City computes the acceptable design I&I for the system (both facilities together) to be 1.1 MGD per inch of rain.

The Westside Treatment Plant expansion was necessary to meet population growth in the service area, and to allow the City to stabilize flows to the Marine Park facility at the present or slightly reduced levels. The City can now route more flows from the Diversion Basin to this Westside Treatment Plant, freeing up additional capacity at the Marine Park facility.

The Westside Treatment Plant has not experienced excessive I&I. The City has plans to expand the service area of this facility as the City's urban growth boundary expands and development within the present urban growth boundary continues. For greater understanding of the City's plans, refer to the Engineering Report Westside 2000; Wastewater Treatment Plant Improvements.

TREATMENT PROCESSES

The treatment consists of: Initial screening of floatables and larger matter at the barminutors then followed by primary sedimentation (four tanks), followed by secondary activated sludge treatment (six tanks). The activated sludge process now includes the ability to achieve controlled nitrification of ammonia through processes described in the Westside 2000 Engineering Report. This is followed by secondary clarification (five tanks). This is followed by a recently installed ultraviolet disinfection process. After this treatment, the treated water flows by gravity to the Columbia River. The removed solids are dewatered using both a gravity belt thickener and a centrifuge with polymer and incinerated in a fluidized bed furnace.

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There is one overflow point at the headworks. This was modified in 1997, to add a surge tank. The surge tank provides some flow equalization capacity for momentary extreme peak flows, and during a power outage until backup power is brought on line. A more thorough description of the processes at the Westside Treatment Plant (eight pages) was included as Attachment 3 of the permit application. This has been updated by the Permittee and is included as Appendix E of this document.

DISCHARGE OUTFALL

The facility discharges secondary treated and disinfected effluent to the Columbia River via a 60-inch diameter concrete pipe fitted to a diffuser. The outfall pipeline extends about 100 feet offshore. The diffuser array consists of 26 ports roughly equally spaced along a 170-foot length of pipe. The discharge ports have been placed along the river within ten degrees of parallel to the river current. The ports are each eight inches in diameter, and discharge toward the center of the river. The diffuser is a minimum of 18 feet below surface at low river flows. The outfall was designed in accordance with the Engineering Report for the Westside Wastewater Treatment Plant Outfall approved by the Department on February 2, 1996. The outfall was placed in service on schedule to comply with the requirements of Department Order DE 93WQ-S165 which required these outfall improvements be completed by July 1, 1997. During inspection in 1999, it was discovered that a stormwater line had been plumbed into this outfall line. The permit will require a mixing zone evaluation that considers the effects of this change from previously approved plans.

RESIDUAL SOLIDS

The treatment facilities remove solids during the treatment of the wastewater at the headworks (grit and screenings), in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, scum, and screenings are drained and disposed of as solid waste at the local landfill. Solids removed from the primary and secondary clarifiers of the Westside Treatment Plant facility are also pumped to the Westside Treatment Plant via a force main and then reintroduced to a gravity sanitary sewer main. Influent BOD and TSS loading estimates account for this source. Solids removed from the industrial pretreatment lagoon are not further treated at the Westside Treatment Plant. Solids settling in the pretreatment lagoon are removed and reintroduced into the stream that enters the headworks of the Westside Treatment Plant. This is accomplished by a rafted sewage pump that is operated on an ongoing basis. The lagoon solids then enter the solids processing train of the Westside Treatment Plant.

PERMIT STATUS

The previous permit for this facility was issued on June 30, 1993. The previous permit was modified on June 6, 1995, and on December 21, 1995. The permit modification of December 21, 1995, recognized an acute mixing zone ratio of 4.2:1 and chronic mixing zone ratios of 19.2:1 in the summer and 13.1:1 in the winter.

Accompanying this 1995 permit modification was the First Amendment to Order Number DE 93WQ-S165. This amendment required either dechlorination or Ultraviolet disinfection to be installed by July 1, 1998. It also required the Permittee to comply with water quality based limitations for ammonia in the shortest practicable time through both outfall modifications and nitrification improvements to the secondary treatment system. The final compliance date for nitrification improvements was established as July 1, 1999. This Order was amended again (second amendment) on July 30, 1996, to defer whole effluent toxicity testing until after completion of nitrification improvements. It also reinforced that nitrification improvements were required to be completed by July 1, 1999. The third amendment of this Order, issued on January 29, 1997, was basically clerical. It rescinded the

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original Order and first amendment in their entirety in lieu of the schedule in the second amendment, which it reiterated.

Of the three requirements, two (UV disinfection and installation of an outfall diffuser) were accomplished prior to requesting a permit renewal. The schedule of construction included as Attachment 4 to the permit application estimated that aeration basin 4 would be retrofitted by January 8, 1999, to allow nitrification of flow volumes permitted under the previous permit. Additionally, by October 4, 1999, the City projects completion of retrofitting of aeration basins 1, 2, and 3 as necessary to increase capacity to a maximum monthly average of 28.3 MGD (without nitrifying), 25.1 MGD (nitrifying). These nitrification improvements have now been accomplished, and an Order of satisfaction issued to the City.

The previous permit placed effluent limits and minimum removal rate requirements on 5-day Biochemical Oxygen Demand (BOD₅) and Total Suspended Solids (TSS). It also included effluent limits on pH and Fecal Coliform bacteria.

The application for permit renewal was submitted to the Department on December 12, 1997, and accepted by the Department on May 5, 1998.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility received its last inspection on June 9, 1999. During that inspection, the effluent was observed to be visually clear, the UV system to be fully operational, the new basins designed to provide nitrification to be operating (as previously constructed basins are being retrofitted), and the new furnace to be nearing operation. The need for O&M manuals for the facility and pretreatment lagoon was discussed. The use of Copper Sulfate was discovered, and further use disallowed until appropriate justification was provided. Plan review discovered a stormwater line has evidently been plumbed into the outfall and information on the flow from that line was requested.

On December 6, 1999, The City of Vancouver submitted a declaration of completion of construction for the facility upgrade. On February 25, 2000, Department staff visited the facility and reviewed the construction of components at the Westside Treatment plant to visually confirm that the additional components described in plans and specifications submitted to the Department had been installed and were functional.

During the history of the previous permit, the Permittee has been in nearly full compliance based on Discharge Monitoring Reports (DMRs) submitted to the Department and inspections conducted by the Department. The facility did, however, exceed its maximum allowable ammonia discharge limit in December 1995, and its TSS limits for maximum weekly and average monthly discharge mass in February 1996. There have also been a couple broken lines caused by the new construction, which occurred in July and August 1998. The sewage from these breaks was, however, contained and treated at the POTW.

Maximum flow volumes are noted on the permit application as being up to 17.4 MGD as a monthly average. The current permit recognizes a dry weather flow capacity of 15.2 MGD (as the average for the maximum month) and a wet weather flow capacity of 21.0 MGD (as the average for the maximum month). The approved and constructed facility, however, has greatly increased capacity, and this permit renewal will incorporate the loading limits appropriate to the new facility. Plans for the recently completed construction of additional treatment capacity are found in the Engineering Report titled Westside 2000 Wastewater Treatment Plant Improvements. Under permit Condition S4.B, the Department accepted the aforementioned Engineering Report and the schedule included as Attachment 4 of the permit application as fulfilling the requirement to plan for and realize additional capacity when the

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capacity of the previous permit was at or nearly exhausted. The schedule identified the major items of work that must be accomplished, and the time frames for the completion of the work.

By the schedule submitted, completion of the Marine Park upgrade from roughly 8.1 to 16.0 MGD as a maximum monthly average is only a year in the future. The completion of the Westside expansion, however, has helped both plants maintain compliance since the Marine Park facility was operating at capacity prior to completion of the Westside expansion. The city can now route significantly more flow to this (Westside) facility from the diversion basin to maintain compliance with design loadings at the Marine Park facility.

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the discharge was reported in the NPDES application and in discharge monitoring reports. The effluent is characterized by that document as follows:

Table 1: Wastewater Effluent Characterization

Conventional Parameter	Concentration and/or Rate
Flow (Million Gallons / Day)	14.2 MGD annual ave, 12.2 – 17.4 MGD monthly average range
pH (SU = Standard Units)	6.9 lowest monthly average, 7.1 highest monthly average
Temperature (Summer)	20.9°C ave., 22.6°C max month ave, 18.9°C min. month ave.
Fecal Coliform	29 CFU maximum monthly ave.
BOD ₅	13 mg/L annual ave, 17.1 mg/L maximum monthly average
TSS	14.1 mg/L annual ave, 21.4 mg/L maximum monthly average
Total Ammonia as N	14 mg/L annual ave, 17 mg/L maximum monthly average
Dissolved Oxygen	7.7 mg/L annual ave, 6.9 mg/L minimum monthly average
METALS / TOXIC POLL.	AVERAGE: (Reference Attachment 2 to permit application)
Antimony (T)	<1.5 µg/L (non detect)
Arsenic (T)	1.5 µg/L
Cadmium (T)	0.5 µg/L
Chromium (T)	1.8 µg/L
Copper (T)	19.6 µg/L
Lead (T)	1.7 µg/L
Mercury (T)	0.3 µg/L
Nickel (T)	6.3 µg/L
Silver (T)	0.6 µg/L
Zinc (T)	46.6 µg/L
Cyanide (T)	16.0 µg/L
ORGANIC POLLUTANTS:	(Reference Permit Application)
Chloroform	1.9 µg/L
Chloromethane	1.9 µg/L
Methylene Chloride	31 µg/L
Trichloroethene	1.0 µg/L
Vinyl Chloride	5 µg/L
1,4 Dichlorobenzene	1 µg/L
Aldrin	0.015 µg/L
Alpha – BHC	0.012 µg/L
Dieldrin	.02 µg/L

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Gamma – BHC	.036 µg/L
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SEPA COMPLIANCE

In accordance with WAC 197-11-855(1), permit renewals by the Department with limits no less stringent than applicable state and federal standards are exempt from the State Environmental Policy Act (SEPA) process. This facility falls under this category. The facility has been discharging for a number of years at the present location. The outfall diffuser has already been installed, and no additional work in the receiving waters is described in the permit application.

PROPOSED PERMIT LIMITATIONS

Federal and state regulations require that effluent limitations set forth in a NPDES permit must be the more stringent of applicable technology or water quality-based limits. Technology-based limitations for municipal discharges are set by regulation (40 CFR part 133, and Chapters 173-220 and 173-221 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule, (40 CFR part 131.36). The most stringent of these types of limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the application. The effluent constituents in the application were evaluated on a technology- and water quality-basis. The limits necessary to meet the rules and regulations of the state of Washington were determined and included in this permit. The Department does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and/or do not have a reasonable potential to cause a water quality violation. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department of the changed discharge.

DESIGN CRITERIA

In accordance with WAC 173-220-150 (1)(g), flows or waste loadings shall not exceed approved design criteria.

The design criteria for this treatment facility are taken from Engineering Report Westside 2000 – Wastewater Treatment Plant Improvements, December 1995, prepared by CH2M Hill and are as follows:

Table 2: Design Standards for the Westside Treatment Plant.

Parameter	Last permit	-- -- Present Facility (upgraded)
Monthly average flow (max. month)	21.00 MGD	28.26 MGD
Monthly average dry weather flow	15.20 MGD	25.10 MGD (nitrifying)
Maximum Week	22.03 MGD	26.54 MGD
Maximum Day	33.16 MGD	41.10 MGD
Peak hourly flow	36.00 MGD	60.00 MGD (41,640 gpm)
BOD ₅ influent loading – max month	24,000 lbs/day	49,525 lbs/day
TSS influent loading – max month	25,000 lbs/day	74,289 lbs/day

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Residential equivalent (@ 250 gpd/RE)	72,400 RE	106,720 RE
Ch.173-224 WAC sets actual RE		

* The POTW currently has six aeration basins on-line in the new configuration with anoxic zones and step feed systems. These represent a significant increase in total aeration basin area from the previous facility, which included only four aeration basins. Aeration basins, however, previously were not the limiting component. The new aeration basins are capable of both a higher loading rate as well as the nitrification of ammonia. The previous loading capacity was based upon the POTW receiving 15.0 MGD at 190 mg/L BOD and 200 mg/L TSS.

Industrial Pretreatment Lagoon Parameter	Design Value
Daily dry weather flow (average month)	3.2 MGD
Daily wet weather flow (average month)	4.7 MGD
Instantaneous peak flow	10.0 MGD
Influent BOD5 loading (average month)	31,000 lbs/day
Influent TSS loading (average month)	20,000 lbs/day

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Municipal wastewater treatment plants are a discharge category for which technology-based effluent limits have been promulgated by federal and state regulations. These effluent limitations are given in the Code of Federal Regulations (CFR) 40 CFR Part 133 (federal) and in Chapter 173-221 WAC (state). These regulations are performance standards that constitute all known available and reasonable methods of prevention, control, and treatment for municipal wastewater.

The following technology-based limits for pH, fecal coliform, BOD₅, and TSS are taken from Chapter 173-221 WAC are:

Table 3: Technology-based Limits.

Parameter	Limit
pH:	shall be within the range of 6 to 9 standard units.
Fecal Coliform Bacteria	Monthly Geometric Mean = 200 organisms/100 mL Weekly Geometric Mean = 400 organisms/100 mL
BOD ₅ (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L or - fifteen percent (15%) of the average influent concentration adjusted downward by the amount of BOD ₅ reintroduced by the Marine Park WRF. Average Weekly Limit = 45 mg/L
TSS (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L or - fifteen percent (15%) of the average influent concentration adjusted downward by the amount of TSS reintroduced by the Marine Park WRF. Average Weekly Limit = 45 mg/L

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The situation whereby the Marine Park facility discharges significant loadings of solids back to the collection system which are then included in the influent sample of the Westside treatment plant is fairly unique. Section 405A of the Clean Water Act prohibits the reintroduction of sewerage sludges to surface waters after removal at a POTW. Because a portion of the solids and BOD₅ routed from the Marine Park plant do exit the Westside plant, we must carefully consider this provision's intent.

The solids processing at the Westside Treatment Plant provides additional treatment to removed solids and associated BOD₅ from the Marine Park plant. The proposed permit language does not allow a higher percent of solids to exit the Westside plant than would otherwise exit the Marine Park plant if sludge processing was to occur there. We found no environmental benefit to requiring each plant to perform its own sludge processing, but could not allow the 15% loading from both plants for the same TSS and BOD₅ loadings.

The Department finds that in this case, the intent of the prohibition on reintroducing sewerage sludge is met so long as the effluent loading from the same sewerage sludges is allowed only at the Marine Park facility. Therefore, no additional loadings (BOD and TSS) are allowed to be discharged from the Westside Treatment Plant as a result of sewerage sludges that are returned to the collection system by the Marine Park facility. To enforce this scheme, influent loadings of BOD and TSS at the Westside Treatment Plant are reduced by the amount discharge from the Marine Park Treatment Plant. This adjusted influent loading is translated to an equivalent concentration, and compared to the effluent BOD₅ and TSS concentrations for purposes of calculating whether the Westside Treatment Plant has achieved an 85% removal rate for BOD₅ and TSS.

Upon recognition that this would impose a more stringent standard upon the Westside Treatment Plant, we notified the City of Vancouver of our desire to obtain additional data to ensure the limit computed in this manner could be reliably achieved. The City subsequently collected daily data from April and May of 2000 to assess whether the 85 percent removal rate could be met when loadings of BOD and TSS reintroduced from Marine Park were subtracted. This also provided a baseline of performance data. The City's June 21, 2000, response letter concluded that the Westside treatment plant still achieved at least a 92 percent BOD₅ removal rate and a 93 percent TSS removal rate in each of these two months after subtracting the Marine Park loadings.

This data established a defensible baseline for using influent loadings to the Marine Park plant to estimate the corresponding loadings reintroduced to the Westside plant. In April 2000, the Marine Park plant reintroduced 90.6 percent of influent TSS loadings, and 70.0 percent of BOD₅ loadings to the plant. In May, the Marine Park facility reintroduced 84.6 percent of influent TSS loadings and 47.5 percent of influent BOD₅ loadings. Due to the expense of requiring daily flow and concentration monitoring of BOD and TSS from several additional wastestreams, the permit will allow use of the higher of these two months; 90 percent of influent TSS and 70 percent of influent BOD₅ to be the "default presumption" in estimating the characteristics of the discharge to the Westside Treatment Plant.

Under this default presumption, the May 2000 BOD₅ removal rate would have been 94.56 percent $[(28,900 - (.7) * (14,141)) - 1,033] / (28,900 - (.7) * (14,141))$. This compares to a 95.35 percent BOD₅ removal through rigorous calculation of flows and loadings, or 0.8 percent less than with the more rigorous method. Using the 90 percent presumption for TSS would yields a removal rate 0.37 percent less than found by sampling (92.05 percent vs. 92.42 percent).

The impact of additional loadings (although still below the adjusted 85 percent removal requirement) from this facility due to the processing of additional pollutants including metals from the Marine Park facility was found to pose no greater threat to the river at this discharge point than if the removed solids and associated BOD₅ were further processed at the Marine Park facility.

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The situation did not warrant adjustment to the concentration based standards of 30 mg/L effluent BOD and TSS for a maximum monthly average, and 45 mg/l as a maximum weekly average for these parameters.

The following technology-based mass limits are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b).

Monthly effluent mass loadings (lbs/day) for TSS and BOD were calculated as the lesser of the following two limits: The maximum monthly design flow (28.26 MGD) x Concentration limit (30 mg/L) x 8.34 (conversion factor) = mass limit of 7,071 lbs/day; or the maximum loading rate (49,525 lbs BOD₅ and 74,289 lbs/TSS) minus the required 85 percent removal which leaves 7,428 lbs BOD₅ and 11,143 lbs TSS. The lesser of these two values yields average monthly mass limits for BOD₅ and TSS, which are both 7,071 lbs.

The weekly average effluent mass loading is calculated as 1.5 x monthly loading = 10,606 lbs/day for both BOD and TSS.

DESCRIPTION OF THE RECEIVING WATER

The facility discharges to the Columbia River, which is designated as a Class A receiving water in the vicinity of the outfall (about river mile 105), with a special temperature standard of 20 degrees C. Other nearby point source outfalls includes Northwest Packing Company (rm 105.1); Great Western Malting (rm 105.1); Portland Sewage Treatment Plant (rm 105.5); Boise Cascade Vancouver (rm 106); Vancouver Marine Park Treatment Plant (rm 110); Vancouver Trout Hatchery (rm 113.5); City of Gresham STP (rm 117.5); and Camas STP (rm 121.2). Significant nearby non-point sources of pollutants were not identified.

Characteristic uses include the following: Water supply (domestic, industrial, agricultural); stock watering; salmonid and other fish migration; rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation. Water quality of this class shall meet or exceed the requirements for all or substantially all uses.

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading study (TMDL).

NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE

Water quality criteria include two sets of numerical standards: Standards for protection of aquatic life; and standards for protection of human health. The standards for protection of aquatic life are set forth in both the state of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC), and the National Toxics Rule (40 CFR 131.36). These numerical criteria are used along with chemical and physical data for the wastewater and receiving water, and the estimated concentration of the effluent at the edge of allowed mixing zones to derive effluent limits in discharge permit. The more stringent of surface water quality-based limits and technology-based limitations must be applied in the permit.

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NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH

The state enforces 91 numeric water quality criteria for the protection of human health as required by the U.S. EPA in the national toxics rule (EPA 1992). These criteria, referenced by WAC 173-201A-040(5) and found in 40 CFR 131.36, are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters. Unless otherwise specified these standards are applied at the edge of the chronic mixing zone.

NARRATIVE CRITERIA

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the state of Washington.

CRITICAL CONDITIONS

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses. The 1996 USGS study "Water Quality of the Lower Columbia River Basin: Analysis of Current and Historical Water Quality Data through 1994" was used to provide data for 1994 which was used to define critical conditions for this permit analysis for most parameters. For pH, however, a broader database was reviewed. The limited data of the report (12 data points) would indicate that a pH of 8.5 was a 90th percentile worst case value. This data is also from a location that is subject to side stream influence. USGS data from station 14144700 at Vancouver shows that of 320 data points between 1990 and 1997, only one exceeded pH 8.5. A pH of 8.2 was found to represent the 90th percentile worst case in the area of the discharge.

MIXING ZONES

Federal regulations allow states to establish mixing zones. Washington State's Water Quality Standards allow the Department to authorize mixing zones around a point of discharge to surface waters. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100.

The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria. This methodology has been adopted in this permit.

SURFACE WATER QUALITY CRITERIA

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Criteria for the Columbia River in the area of this discharge are summarized below:

Fecal Coliforms	100 colonies/100 mL maximum geometric mean with no more than 10 percent of samples exceeding 200/100 mL
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Dissolved Oxygen	8 mg/L minimum
Temperature	Special condition of 20 degrees Celsius maximum or incremental increases above background (refer to 173-201A for greater detail)
pH	6.5 to 8.5 standard units
Turbidity	Less than 5 NTUs above background
Toxics	No toxics in toxic amounts (see Appendix D for numeric criteria for toxics of concern for this discharge)

IMPAIRED PARAMETERS

The lower Columbia River is listed on the Washington State Water Quality Assessment [305(b) report] as being impaired for the following parameters:

Sediment Bioassay, Total Dissolved Gas, PCB-1254, Arsenic, 4,4-DDE, Dieldrin, Bis (2-ethylhexyl) Phthalate, Temperature, Dissolved Oxygen, pH, and Fecal Coliform.

A TMDL was implemented for PCB-1254, but POTWs were not found to be sources of PCB-1254. The fact sheet for the previous issuance of this permit goes into greater detail on this subject.

SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA

Pollutant concentrations in the proposed discharge exceed water quality criteria with technology-based controls, which the Department has determined to be AKART. A mixing zone is authorized in accordance with the geometric configuration, flow restriction, and other restrictions for mixing zones in Chapter 173-201A WAC and are defined as follows:

The dilution factors of effluent to receiving water that occur within these zones have been determined at the critical condition by the use of UDKHDEN version 2.7. The dilution factors have been determined to be (reference also Appendix C):

Water Quality Criteria:	Acute Mixing Ratio	Chronic Mixing Ratio
Aquatic Life	9:1	56:1
Human Health, Carcinogen	N/A	56:1
Human Health, Non-carcinogen	N/A	56:1

The City estimated the mixing zones for the new outfall diffuser in Engineering Report for Improvements to the Westside Wastewater Treatment Plant Outfall for City of Vancouver, October 1995. This report was approved by the Department as satisfying the requirements for an Engineering Report (see Chapter 173-240 WAC) in January 1996. The modeling included with the report, assumed that the mixing zone would extend 317 feet downstream from the most downstream port, 100 feet upstream from the most upstream port, and from the bank out to the discharge ports and 317 feet beyond them towards the opposite bank. The City's analysis, using this assumption, found the new diffuser should yield a minimum dilution ratio 9:1 at the acute boundary and 56:1 at the chronic boundary.

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Upon review, the Department concluded that it was inconsistent with regulation to allow the mixing zone to begin with the furthest downstream port. To be entirely consistent with the intent of the regulation, it was determined that the mixing zone limit in the downstream direction of 300 feet plus the depth of the discharge port must be calculated from the furthest upstream port. This policy clarification is included in appendix 6, page APP6-76 of Ecology's Permit Writer's Manual. Since the diffuser is 174 feet in length, this reduced the distance downstream (from the most downstream port) for the chronic mixing zone from 317 feet to 143 feet (43.6 meters).

This change, however, did not affect the mixing zone ratios at the acute zone since the limiting mixing ratio was in the cross stream direction. The cross stream boundary was established as modeled (317 feet out from the diffuser ports). This is less than the maximum allowable width of 600 feet (25 percent of the river width at the point of discharge). The acute mixing zone would normally be established to extend an equal width, but only ten percent of the downstream distance authorized for the chronic zone. For example the same width but only 10 feet upstream, and 31.7 feet downstream from the most upstream port.

Due to the down-stream (rather than cross-stream) orientation of the 174 foot long diffuser, however, there is no way to literally apply this standard and still provide any acute mixing zone. There are discharge ports much further than 31.7 feet downstream. The acute mixing zone used in the modeling provided in the approved Engineering Report for this outfall presumes the mixing zone will extend 31.7 feet towards the opposite bank, and 31.7 feet downstream. The Department has determined that sufficient justification exists to accept these presumptions. The upstream boundary will be established as 10 feet from the upstream port, and the acute mixing zone boundary in the near shore direction shall also be 31.7 feet. The mixing zone boundaries are therefore established as illustrated.

DRAWINGS FOR CONCEPTUAL BASIS ONLY: NOT TO SCALE

Mixing Zone Ratios from Engineering Report – Adjusted to Above Proposed Boundary in Chronic Case:

FLOW RATE	EFFLUENT TEMP	CURRENT SPEED (CM/S)	AMB TEMP C	ACUTE BOUNDARY	PRESUMED CHRONIC BOUNDARY	PROPOSED CHRONIC BOUNDARY
25.5	21.0	1.0	21	10:1	64:1	64:1
25.5	21.0	14.0	21	18:1	74:1	56:1
67.55	21.0	1.0	21	9:1	59:1	59:1
67.55	21.0	14.0	21	19:1	86:1	64:1
8.0	21.0	1.0	21	17:1	56:1	56:1
8.0	21.0	14.0	21	21:1	87:1	66:1
12.0	21.0	1.0	21	14:1	58:1	58:1
12.0	21.0	14.0	21	19:1	76:1	57:1
Limit->				9:1	56:1	56:1

As shown above, our review of the model found that when the dilution zone boundaries were adjusted to the proposed dimensions, they did not reduce the acute mixing ratio of 9:1 and a chronic dilution ratio of 56:1 estimated by the Engineering Report for low flow months (August through October). The tabulation of model results and policy are included in Appendix C. There was not sufficient information with regards to the lowest and highest river current during medium and high flow months to consider seasonal limits, nor was there a request to do so.

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants--their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as Biochemical Oxygen Demand (BOD) is a far-field pollutant whose adverse effects occur over a period of time. The BOD of the effluent exerts its influence on the oxygen levels of the water as organisms use oxygen to digest available “food” remaining in the wastewater. The most critical effect of the BOD of the discharge will be many miles downstream after the plume has generally had time to thoroughly mix with the entire river flow. Thus, the method of calculating water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

The derivation of water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water.

The ambient background data used by the City for this mixing zone analysis includes the following:

Parameter	Value used
Stream velocity (at River Flows of 111,600 cfs)	0.01 m/sec (10 percentile) and 0.14 m/sec (average)
Depth of diffuser	5.2 meters (17 feet)
Effluent Temperature	21.0° C
Ambient Temperature	20.9° C (uniform - no stratification)
Discharge flow rate	2.959 m ³ /s (67.55 MGD – peak hour)

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Diffuser diameter	.203 meters (8 inches)
Number of Ports	26
Port Spacing	1.8 meters (6 feet) (overall length is 174 feet however)
Salinity	0.000 PPT

Acceptance of the model results using these assumptions is not to be taken as an endorsement that these values are the most correct and appropriate to use. There are two major areas where the assumptions are significantly less than ideal. These are the stream flow and temperature. Reasonable potential calculations used values, which were felt to be more representative of reasonable worst case situations.

FLOW VELOCITY ASSUMPTIONS: Ideally, more information would have been collected for stream flow velocities. For the acute mixing zone analysis the ideal parameter for stream velocity would be the lowest 10 percentile current velocity at stream flows closer to the 7Q10 low flow rate of about 80,000 cfs and 90 percentile current velocity at the 7Q10 high flow rate rather than stream velocities at the 1994 study conditions of 111,600 cfs. The Permittee has requested that the chronic mixing zone boundary be established from the center of most downstream port.

The Department is not ruling this out by establishing the chronic downstream boundary from the most upstream port in this permit action. Model runs to determine the acute mixing zone ratio at the 90th percentile stream velocity during average and 7Q10 high flows are necessary prior to deciding whether this is appropriate. The high current speed analysis is especially important because at high current speeds the effluent plumes from successive ports will overlap and create a much higher concentration at the edge of the acute and chronic mixing zone boundaries than would be shown by an analyses that does not consider overlapping plumes. An analysis considering the increased concentration at the mixing zone boundaries due to the overlapping of plumes at critically high current speeds, or actual measurement of the effluent plume concentrations during such a situation is proposed to be required by the permit. The timing of the requirement allows this data to be valid and current prior to the development of the next permit for this facility.

DISCHARGE DEPTH: Depth of the outfall ports should be measured or estimated during each situation and the appropriate depth used in the model runs, or if a dye study is done, depth should be recorded when current speed is measured.

TEMPERATURE ASSUMPTIONS: The assumptions of effluent and ambient temperature would ideally also have been more thoroughly documented. Assuming the ambient environment is unstratified as done in the model is a "best case" scenario, and bears confirmation. Ambient temperatures have ranged up to 22.6 degrees Celsius during the lowest flow times while 20.9 degrees Celsius was used for the analysis. Effluent temperatures may not always be higher than the stream temperature. If this situation happens, the waste stream could trap at the bottom and receive little dilution by the time it reaches the physical dimensions of the mixing zone. Conversely, when the effluent is much warmer than ambient waters (winter) it can rise too fast to achieve optimum mixing. Only modeling in the most extreme temperature differences and stratification reasonably expected to occur will demonstrate the effects of these assumptions.

BOD₅--Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters. This discharge with technology-based limitations results in a small amount of BOD loading relative to the large amount of dilution occurring in the receiving water at critical conditions.

Therefore, the technology-based effluent limitation for BOD₅ was placed in the permit. Technology-based limitations will be protective of dissolved oxygen criteria in the receiving water.

The impact of BOD on the receiving water was modeled using the Streeter-Phelps equation, at critical condition and with the technology-based effluent limitation for BOD₅ described under "Technology-Based Effluent Limitations" above. The calculations used to determine dissolved oxygen impacts are shown in Appendix D along with the Reasonable Potential analysis.

Temperature--The impact of the discharge on the temperature of the receiving water was modeled by simple mixing analysis at critical conditions. The receiving water temperature at the critical condition is 21.6 degrees Celsius (90 percentile of temperature readings at Warrendale during August). The effluent temperature (highest daily value during August of the same year) was 24.2 degrees Celsius. The predicted resultant temperature at the boundary of the chronic mixing zone (MZ ratio of 56:1) is 21.65 degrees Celsius and the incremental rise is 0.05 degrees Celsius. This is lower than the maximum allowable incremental increase of 0.3 degrees Celsius from all sources. The amount of temperature degradation from all sources has not been determined. Therefore the Department cannot determine whether this exceeds 0.3 degrees Celsius when natural conditions are at 20 degrees, or 1.6 degrees Celsius (which is the other criteria the discharge must meet) when ambient temperatures are below 20 degrees C. This analysis would require a TMDL study. Since these are interstate waters, such a study must be conducted by EPA. Therefore temperature was not limited in the permit.

pH--Review of historical data for the POTW shows that during the critical season (August through mid-October), effluent did not exceed 6.9 SU. USGS Records show ambient conditions during this period in 1994 were never below 7.8 SU. The lower pH of the effluent actually lessens the toxicity of ammonia, and helps to restore the pH of the river closer to the center of the desired range of 6.5 to 8.5 SU. The discharge does not have a reasonable potential to exceed criteria for the receiving waters at the edge of the established mixing zones. Therefore, compliance with the technology-based limits of six to nine will assure compliance with the Water Quality standards for Surface Waters. This analysis does not consider potential far field effects on pH from the addition of nutrients to the receiving water.

Fecal Coliform--The concentration of fecal coliform organisms at the edge of allowable mixing zones were modeled by simple mixing analysis using the technology-based limit of 400 organisms per 100 ml and a chronic dilution factor of 56:1, and an ambient concentration of four colonies per 100 ml. This yields a concentration below 20/100 ml.

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters with the technology-based limit. Therefore, the technology-based effluent limitation for fecal coliform bacteria was placed in the proposed permit.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. Water quality criteria consider both protection of aquatic life and human health as required by EPA in the National Toxics Rule. This process occurs concurrently with the derivation of technology-based effluent limits. Facilities with technology-based effluent limits defined in regulation are not exempted from meeting the Water Quality Standards for Surface Waters or from having surface water quality-based effluent limits.

The following toxic pollutants were reported to be present in the discharge in the permit application or determined present through previous data: ammonia, antimony, cadmium, chromium, copper, lead, mercury, nickel, silver, thallium, zinc, chloroform, methyl chloride, methylene chloride, trichloroethylene vinyl chloride, 1,4 dichlorobenzene, aldrin, hexachlorocyclohexane-alpha, dieldrin, and hexachlorocyclohexane.

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The determination of the reasonable potential for the above toxic chemicals to exceed the water quality criteria was evaluated with procedures given in EPA, 1991 (Appendix D) at the critical condition. The critical condition in this case occurs between August 1, and October 15, of each year. The parameters used in the critical condition modeling are as follows: acute dilution factor 9:1, chronic dilution factor 56:1, receiving water temperature 21.5 degrees Celsius, receiving water alkalinity 64 (as mg CaCO₃/L), and levels of toxic chemicals as listed in Appendix D.

Valid ambient background data was available for metals, but not organic toxic pollutants of concern. Calculations using all applicable data resulted in a determination that there is no reasonable potential for this discharge to cause a violation of water quality standards except for two organic pollutants. The two organic pollutants are aldrin (CAS# 309002) and dieldrin (CAS# 60571). The criteria that would be exceeded are for protection of human health. In accordance with the Department's Permit Writer's Manual, figure VII-1 on page VII-12, the Permittee was not given limits on these two pollutants because the Permittee is in the midst of an improvement to increase the level of treatment. The facility is required, by Order, to install nitrification in 1999. These two pollutants will continue to be monitored by the Pretreatment Requirements of the permit. The Permittee is urged to take all reasonable measures to ensure the integrity of the data on these pollutants collected in the next permit cycle, and explore any and all possible non-domestic sources of these pollutants discharging to the Permittee's collection system.

The analysis of whether effluent limits for ammonia were required was conducted following the methodology in EPA's Technical Support Document for Water Quality Based Toxics Control. While the Permittee has been Ordered to nitrify ammonia, however, due to the increased mixing provided by the Permittee's new outfall diffuser, the ammonia concentrations that would result even if the POTW were not operated in a nitrifying mode were not found to have a reasonable potential to cause a violation of the Water Quality Standards. Ammonia is, however, a toxic pollutant that the Permittee has the ability to reduce to a significant degree. The Department, therefore, considered including a narrative requirement to reduce ammonia to the greatest extent possible within the operational and seasonal constraints of the treatment facility. The City's other treatment plant, the Marine Park facility, has been operated in a nitrifying mode and when that was done it achieved excellent ammonia nitrification. Without a narrative requirement, the Marine Park facility's average annual ammonia concentration was about 0.14 mg/l when nitrifying. Such a narrative requirement therefore appears not to be necessary to achieve similar treatment.

ANTIDEGRADATION

The state of Washington's Anti-degradation Policy requires that discharges into receiving waters shall not further degrade the existing water quality of the water body. In cases where the natural conditions of receiving waters are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when the natural conditions of receiving waters are of higher quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. More information on the state Anti-degradation Policy can be obtained by referring to WAC 173-201A-070.

Temperatures in the lower Columbia consistently exceeded the state's standards in July and August. The 90th percentile value for temperature in August in the Columbia River at Warrendale according to the USGS Water Resources Investigations Report 95-4294 (page 43) is 21.6 degrees Celsius. This exceeds the criteria of 20 degrees established in 173-201A WAC for this portion of the River. The highest reported daily average effluent temperature from this facility during August 1994, was 24.2 degrees. Temperatures of wastewater after treatment with the new treatment process, which involves step feed and anoxic zones as well as increases to the total amount of air supplied to the wastewater should be only slightly cooler. To meet the criteria for temperature, the POTW would require the mixing zone ratio at

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the edge of the chronic mixing zone to be at least 14:1. This criteria has been met (see later mixing zone section). Therefore, we have concluded that the POTW does not require a permit limit for temperature.

With regards to arsenic, there was no method sensitive enough to evaluate ambient levels prior to the last three years. The Vancouver ambient metals study submitted January 9, 1997, was found to be the best and most reliable data for the low flow period of the year in the area of the outfall. This study found dissolved arsenic levels in the Columbia River varied from 0.83 µg/l to 0.97 µg/l in their six sampling events. This provided much more reliable data than previous results from sampling that had not used EPA's "Clean Sampling" protocol (EPA Method 1669, 4/95). The Water Quality (WQ) standards for total arsenic are 360 µg/L at the acute boundary and 190 µg/L at the chronic mixing zone boundary. The WQ standard for inorganic arsenic (not measured by the POTW) is 0.018 µg/L at the chronic mixing zone boundary. Data clearly shows that neither of these criteria is in danger of being violated. The average discharge concentration for total arsenic from the Westside Treatment Plant was 1.45 µg/l as reported in attachment 2 to the Permit Application. Unfortunately, total and dissolved arsenic data does not establish the concentration of the inorganic form of arsenic in either the river or effluent. Also, the Federal Register listing of "National Recommended Water Quality Criteria: Republication" dated December 10, 1998, p. 68359, footnote M states that EPA is currently reassessing the criteria for arsenic, and that upon completion of the reassessment the Agency will publish revised criteria as appropriate.

The Department has reviewed existing records on metals and organic pollutants, and has determined that the Department will use the designated classification criteria for this water body in the proposed permit. This discharge should not pose a threat to cause or aggravate a loss of beneficial uses.

WHOLE EFFLUENT TOXICITY

The Water Quality Standards for Surface Waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent and, therefore, this approach is called whole effluent toxicity (WET) testing.

Since the WET testing was delayed pending the installation of nitrification at the Westside Treatment Plant, data has not yet been collected on the effluent. This characterization will be required upon completion of construction to ensure that no reasonable potential exists to cause receiving water toxicity. If the effluent shows a level of toxicity that warrants continued monitoring or corrective actions, the Permittee will be given WET limits and will be required to perform recurring monitoring. Otherwise the Permittee will only need to retest the effluent prior to application for permit renewal in order to demonstrate that toxicity has not increased in the effluent.

If the Permittee makes other process or material changes which, in the Department's opinion, results in an increased potential for effluent toxicity, then the Department may require additional effluent characterization in a regulatory order, by permit modification, or in the permit renewal. Toxicity is assumed to have increased if WET testing conducted for submission with a permit application fails to meet the performance standards in WAC 173-205-020, "whole effluent toxicity performance standard" or if WET testing conducted in response to rapid screening tests fails to meet the performance standards in WAC 173-205-020 "whole effluent toxicity performance standard." The Permittee may demonstrate to the Department that changes have not increased effluent toxicity by performing additional WET testing after the time the process or material changes have been made.

Accredited WET testing laboratories have the proper WET testing protocols, data requirements, and reporting format. Accredited laboratories are knowledgeable about WET testing and capable of

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calculating an NOEC, LC₅₀, EC₅₀, IC₂₅, etc. All accredited labs have been provided the most recent version of the Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria* which is referenced in the permit. Any Permittee interested in receiving a copy of this publication may call the Ecology Publications Distribution Center (360) 407-7472 for a copy. The Department recommends that Permittees send a copy of the acute or chronic toxicity sections(s) of their permits to their laboratory of choice.

In accordance with WAC 173-205-060(1), the Permittee must repeat the effluent characterization under the following circumstances:

- The Permittee has made changes to processes, materials, or treatment that could result in an increase in effluent toxicity.
- The Permittee has experienced the addition of a new industrial discharger to the sewage collection and treatment system and cannot demonstrate that the new source is nontoxic or that the pretreatment program and local limits are adequate to control toxicity from the new source.
- The average dry weather flow volume has changed by ten percent or more due to changes in plant processes, production changes, or increases in the number of users.

GROUND WATER QUALITY LIMITATIONS

The Department has promulgated Ground Water Quality Standards (Chapter 173-200 WAC) to protect uses of ground water. Permits issued by the Department shall be conditioned in such a manner so as not to allow violations of those standards (WAC 173-200-100). This Permittee has no discharge to ground and therefore no limitations are required based on potential effects to ground water. Permit conditions do prohibit introduction of leachate to ground.

MONITORING REQUIREMENTS

Monitoring, recording, and reporting requirements are based upon WAC 173-220-210 and 40 CFR 122.41. These requirements are necessary to verify that the treatment process is functioning correctly, and the treatment works is within design capacities and effluent limitations. Monitoring also allows the Department to evaluate trends in levels of discharge of toxic pollutants, to gage pretreatment program effectiveness, and estimate reasonable potential for exceeding a proposed or newly promulgated standard.

Monitoring of sludge quantity and quality is necessary to determine the appropriate uses of the sludge. Sludge monitoring is required by the current state and local solid waste management program and also by EPA under 40 CFR 503. Because the biosolids program has been developed as a separate permit system, the only sludge monitoring in this permit is for data that is necessary for purposes of oversight of the pretreatment program.

The monitoring schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent with guidance in the Department's *Permit Writer's Manual* (table XIII-1E, 7/94 as amended) for Activated Sludge Plants > 5.0 MGD.

As a pretreatment POTW, the City is required to have influent, primary clarifier effluent, final effluent, and sludge sampled for toxic pollutants in order to characterize the industrial input, and periodically

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recalculate local limits. Sampling is also done to determine if pollutants interfere with the treatment process or pass through the plant to the sludge or the receiving water. The monitoring data will be used by the City to confirm the effectiveness, and periodically revise local limits which commercial and industrial users must meet.

EFFLUENT LIMITS BELOW QUANTITATION

The water quality-based effluent limit for several metals are the capability of 40 CFR part 136 approved methods to quantify. The City has requested and been granted permission from EPA to use EPA Method 200.8 for a number of metals. This permit will require this method for applicable metals. This approval was not intended for mercury. For mercury, EPA's Clean Sampling method requires using EPA Method 1631, the Oxidation /Purge & Trap/Cold Vapor Atomic Fluorescence Spectrometry (CVAFS) method as appropriate for quantifying compliance at the water quality standard. To provide meaningful data on mercury, this CVAFS method is necessary.

To analyze for inorganic arsenic, it is necessary to use the method specified in EPA Method 1669 (clean sampling) to provide defensible data. This is EPA Method 1632: Determination of Inorganic Arsenic in Water by Hydride Generation Flame Atomic Absorption. Because EPA is re-evaluating the human health criteria for inorganic arsenic, only effluent sampling for inorganic arsenic during the last year of the permit cycle will be required.

For maximum daily effluent limits, if the measured effluent concentration is below the Quantitation Level, the Permittee reports NQ for non-quantifiable. For average monthly effluent limits, the Permittee is to include laboratory results below the Quantitation Level but above the Method Detection Level in calculating the (average monthly) value.

LAB ACCREDITATION

With the exception of certain parameters the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, Accreditation of Environmental Laboratories. The Westside Treatment Plant does have an accredited laboratory on site. That treatment plant is accredited for the following parameters:

Ammonia, BOD, Chlorine, Dissolved Oxygen, Hardness, Orthophosphate, pH, TSS, and Fecal Coliform Bacteria.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3 are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 273-220-210).

PREVENTION OF FACILITY OVERLOADING

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 requires the Permittee to take the actions detailed in proposed permit requirement S.4. to plan expansions or modifications before existing capacity is reached and to report and correct conditions that could result in new or increased discharges of pollutants. Condition S.4 requires the Permittee to identify when 85 percent of design capacity is reached, and then to develop a plan for dealing with the impending lack of capacity within the next six

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months. The Department has last recognized plans to expand the facility to 28.26 MGD (maximum monthly average flow). These plans were approved and construction has been completed. When flows or loadings reach 85 percent of those authorized under this new 28.26 MGD expansion for three consecutive months, or when capacity is expected to be reached within five years additional plans are required.

OPERATION AND MAINTENANCE (O&M)

The proposed permit contains Condition S.5 as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

RESIDUAL SOLIDS HANDLING

To prevent water quality problems the Permittee is required in permit Condition S7 to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and State Water Quality Standards.

The final use and disposal of sewage sludge from this facility if and when discharged is regulated by U.S. EPA under 40 CFR 503. The disposal of other solid waste is under the jurisdiction of the Clark County Health Department. Requirements for disposal of ash from incineration of sewerage sludge depends on the characteristics of the ash (whether they meet TCLP requirements for dangerous waste). Airborne emissions from incineration of sewerage sludge fall under the jurisdiction of the Southwest Washington Air Pollution Control Authority (SWAPCA).

Requirements for monitoring sewage sludge and recordkeeping are included in this permit. This information is needed for the City to develop, refine, and periodically recalculate local limits, and will be required under 40 CFR Part 503 if the City ever develops a biosolids program.

PRETREATMENT

FEDERAL AND STATE PRETREATMENT PROGRAM REQUIREMENTS

Under the terms of the addendum to the "Memorandum of Understanding between Washington Department of Ecology and the United States Environmental Protection Agency, Region 10" (1986), the Department has been delegated authority to administer the Federal Pretreatment Program. The Department acts as the approval authority for oversight of delegated POTWs such as Vancouver, and as the control authority in non-delegated jurisdictions.

To provide more direct and effective control of pollutants discharged, the City has been further delegated permitting, monitoring, and enforcement authority for industrial users tributary to the City's treatment plants. The City should refer to its delegation Order, its approved program (including the local Ordinance), and this permit to understand their requirements with regards to pretreatment.

The Department oversees the delegated Industrial Pretreatment Program to assure compliance with federal pretreatment regulations (40 CFR Part 403), categorical standards, and state regulations (Chapter 90.48 RCW and Chapter 173-216 WAC). The Permittee is required by this permit to summarize key indicators of performance in an annual report to the Department. The annual due date of this report has not been significantly altered.

As a component of the required annual pretreatment report, the Permittee shall re-evaluate the effectiveness of its local limits in preventing pass through or interference. Upon determination by the

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Department that any pollutant present causes pass through or interference, or exceeds established sludge standards, the Permittee shall establish new local limits or revise existing local limits as required by 40 CFR 403.5. In addition, the Department may require revision or establishment of local limits for any pollutant that causes an exceedance of the Water Quality Standards or established effluent limits, or that causes whole effluent toxicity. The determination by the Department shall be in the form of an Administrative Order. In order to develop these local limits, the Department will provide environmental criteria or limits for the various pollutants of concern.

The Department may modify this permit to incorporate additional requirements relating to the establishment and enforcement of local limits for pollutants of concern. Any permit modification is subject to formal due process procedures pursuant to state and federal law and regulation.

WASTEWATER PERMIT REQUIRED

State regulations RCW 90.48 and WAC 173-216-040 require SIUs to obtain a permit prior to discharging industrial wastes to the Permittee's sewerage system. This provision prohibits the POTW from accepting industrial wastewater from any such dischargers without first following the permitting procedures of its approved pretreatment program.

REQUIREMENTS TO IDENTIFY AND REPORT INDUSTRIAL USERS

The City's approved program contains procedures for routinely identifying new industrial users. Examples of such routine measures include regular review of business tax licenses for existing businesses and review of water billing records and existing connection authorization records. System maintenance personnel can also be diligent during performance of their jobs in identifying and reporting as-yet unidentified industrial dischargers. Local newspapers, telephone directories, and word-of-mouth can also be important sources of information regarding new or existing discharges potentially subject to the pretreatment program. The POTW is required to notify all industrial users, in writing, of their classification (whether they are a SIU, or subject to categorical standards), and responsibilities regarding their classification such as applying for and securing a permit as a condition of discharge to the Permittee's treatment plant.

DUTY TO ENFORCE DISCHARGE PROHIBITIONS

This provision prohibits the POTW from authorizing or permitting an industrial discharger to discharge certain types of waste into the sanitary sewer. The first portion of the provision prohibits acceptance of pollutants which cause pass through or interference. The definitions of pass through and interference are in Appendix B of the fact sheet.

The second portion of this provision prohibits the POTW from accepting certain specific types of wastes, namely those which are explosive, flammable, excessively acidic, basic, otherwise corrosive, or obstructive to the system. In addition wastes with excessive BOD, petroleum based oils, or which result in toxic gases are prohibited to be discharged. The regulatory basis for these prohibitions is 40 CFR Part 403, with the exception of the pH provisions which are based on WAC 173-216-060.

The third portion of this provision prohibits certain types of discharges unless the POTW receives prior authorization from the Department. The discharges include cooling water in significant volumes, stormwater and other direct inflow sources, and wastewaters significantly affecting system hydraulic loading, which do not require treatment.

RECEIVING WATER STUDY

Condition S8 of the permit requires certain specific ambient monitoring to be conducted by the Permittee in order to allow the Department to periodically re-evaluate the potential for the discharges from this and the Marine Park facility to cause receiving water quality standards to be exceeded at the edge of the applicable mixing zones. These requirements were transmitted to the Permittee by letter for the previous permit cycle, but it is more appropriate to put recurring requirements applicable to a discharge in the NPDES permit where such can be forecast in advance. It is not necessary, however, for both of the City's permits to include this requirement since we believe the data will be applicable to both sites. Therefore a similar requirement is absent from the Marine Park NPDES permit.

OUTFALL EVALUATION

Proposed permit Condition S11 requires the Permittee to conduct an initial outfall inspection and submit a report detailing the findings of that inspection. The purpose of the inspection is to determine the condition of the discharge pipe and diffusers and to determine if sediment is accumulating in the vicinity of the outfall. The inspection is to be repeated every two years thereafter. The outfall diffuser structure is in a location where significant numbers of vessels come into close proximity to it. This dictates the frequency of the inspections.

MIXING ZONE MODELING

Current modeling tools more precisely estimate the impacts of overlapping plumes such as would exist during higher stream velocity situations with the new outfall diffuser. The permit includes a requirement to do either modeling similar to that done for Aberdeen (sequential spatial analysis of plume interference) or a dye study. In presenting the results of such modeling, if the Permittee finds that the dynamics justify using a point other than the most upstream port of the diffuser array for establishing the mixing zone boundaries, the results of modeling at the proposed boundaries and the justification for this alternate point shall be included. Modeling shall be submitted for the 10th percentile and 90th percentile flow velocities during the 7Q10 high and low flow situations (four cases).

If the Permittee decides rather to do a dye study, it needs to be done in accordance with current Department guidance on such studies, and to also be calibrated to the 10th percentile and 90th percentile flow velocities during the 7Q10 high and low flow situations (four cases).

In conjunction with this permit renewal, the Department will decide on the basis of the best available information, whether to begin the downstream extent of the chronic mixing zone from the most upstream point of the diffuser array or an alternate location.

GENERAL CONDITIONS

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual municipal NPDES permits issued by the Department.

General conditions of the proposed permit are based upon the requirements of federal regulation 40 CFR part 122 and applicable state law. Condition G1 requires responsible officials or their designated representatives to sign submittals to the Department. Condition G2 requires the Permittee to allow the Department to access the treatment system, production facility, and records related to the permit. Condition G3 specifies conditions for modifying, suspending or terminating the permit. Condition G4 requires the Permittee to apply to the Department prior to increasing or varying the discharge from the

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levels stated in the permit application. Condition G5 requires the Permittee to construct, modify, and operate the permitted facility in accordance with approved engineering documents. Condition G6 prohibits the Permittee from using the permit as a basis for violating any laws, statutes, or regulations. Conditions G7 relates to permit renewal. Condition G8 prohibits the reintroduction of removed substances back into the effluent. Condition G9 states that the Department will modify or revoke and reissue the permit to conform to more stringent toxic effluent standards or prohibitions. Condition G10 incorporates by reference all other requirements of 40 CFR 122.41 and 122.42. Condition G11 notifies the Permittee that additional monitoring requirements may be established by the Department. Condition G12 requires the payment of permit fees. Condition G13 describes the penalties for violating permit conditions.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

The Department may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards, Sediment Quality Standards, or Ground Water Standards, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to protect human health, aquatic life, and the beneficial uses of waters of the state of Washington. The Department proposes that this permit be issued for five years.

REFERENCES FOR TEXT AND APPENDICES

City of Vancouver

1998, 9/30 Annual Pretreatment Program Report, Submittal from the City of Vancouver to WDOE, T. Boyer.

1998, 6/22 Letter RE: *NPDES Permit Application for Westside WWTP Permit 002435-0*, T. Boyer

1998, 5/13 Letter RE: *1997 I&I Reports for the Westside Wastewater Treatment Plant, Marine Park Water Reclamation Facility, and 1997 Annual Assessment for Westside Wastewater Treatment Plant* T. Boyer

1997, 12/9 Letter RE: *NPDES Application for Westside WWTP, Permit 002435-0 and Marine Park Water Reclamation Facility, Permit No. 002436-8*. T. Boyer

1997, 1/9 Letter RE: *Transmittal of the Columbia River Receiving Water Characterization Data for the Marine Park Water Reclamation Facility and the Westside Wastewater Treatment Plant (Permit No. WA-002435-0)*, T. Boyer

1995, Engineering Report “Westside 2000” Wastewater Treatment Plant Improvements, City of Vancouver, prepared by CH2M Hill, 12/95

1995, Engineering Report for Improvements to the Westside Wastewater Treatment Plant Outfall for City of Vancouver Washington, City of Vancouver, prepared by CH2M Hill, 10/95

1994, Vancouver Eastside and Westside Wastewater Treatment Plants Outfall Mixing Zone Evaluations, City of Vancouver, prepared by Brown and Caldwell, 1/95

Environmental Protection Agency (EPA)

1996. CORMIX (Cornell Mixing Zone Analysis Program) Version 3.2, Center for Exposure Assessment Modeling (CEAM), ORD, USEPA, 12/96

1994. PLUMES Version 3.00, Center for Exposure Assessment Modeling (CEAM), ORD, USEPA, (Containing UM & RSB analysis tools), 12/94

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.

1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington, D.C.

1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.

1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C.

Metcalf and Eddy.

1991. Wastewater Engineering, Treatment, Disposal, and Reuse. Third Edition.

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Tsivoglou, E.C., and J.R. Wallace.

1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology.

1998. May 18, Memo from Norm Glenn, EILS to WQ Program and D. Knight RE: *Mixing Zone Size for Vancouver Westside Treatment Plant*.

1997. January 29, Letter to Hon. Royce Pollard RE: *Third Amendment to Order No. DE93WQ-S165*.

1996. July 30, Letter to Hon. Bruce Hagensen RE: *Second Amendment to Order No. DE93WQ-S165*

1996. January 9, Letter to Hon. Bruce Hagensen RE: *Modification of NPDES Waste Discharge Permit No. WA-0024350*

1995. December 21, Letter to Hon. Bruce Hagensen RE: *Modification of NPDES Waste Discharge Permit NO. WA-0024350 and Amendment of Order No. DE 93WQ-S165*

1995. July 10, Letter to E. Spray RE: *Approval of use of EPA Method 200.8 for Metals Analyses*.

1994. Permit Writer's Manual. Publication Number 92-109 w/changes through July 1998.

1991. May 31, *Metal and Fecal Coliform Concentrations in the Lower Columbia River*,
Departmental communication of study results by A. Johnson & B. Hopkins.

Water Pollution Control Federation.

1979. In-stream Deoxygenation Rate Prediction. Journal Environmental Engineering Division, ASCE. 105(E2). (Cited in EPA 1985 op.cit.)

Oregon State University

1994. UDKHDEN, *Solution to Multiple Buoyant Discharge Problem with Ambient Currents and Vertical Gradients*, Version 2.7, Program based on work of: Kannberg, L.D., and Davis L.R., Center for Graduate Studies. 5/94

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations, which are described in the rest of this fact sheet.

Public notice of application was published on August 30, 1998, and September 6, 1998, in *The Columbian* to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department will publish a Public Notice of Draft (PNOD) in *The Columbian* to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the 30-day comment period to the address above. The request for a hearing shall indicate the interest of the party and the reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least 30 days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

The Department will consider all comments received within 30 days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (360) 407-6277, or by writing to the address listed above.

This permit and fact sheet were written by David J. Knight

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APPENDIX B--GLOSSARY

Acute Toxicity--The lethal effect of a pollutant on an organism that occurs within a short period of time, usually 48 to 96 hours.

AKART-- An acronym for "all known, available, and reasonable methods of prevention, control, and treatment".

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation --The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month (except in the case of fecal coliform). The daily discharge is calculated as the average measurement of the pollutant over the day.

Average Weekly Discharge Limitation -- The highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week. The daily discharge is calculated as the average measurement of the pollutant over the day.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the state. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD₅--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD₅ is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity--The effect of a pollutant on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Combined Sewer Overflow (CSO)--The event during which excess combined sewage flow caused by inflow is discharged from a combined sewer, rather than conveyed to the sewage treatment plant because either the capacity of the treatment plant or the combined sewer is exceeded.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing a minimum of four discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial User-- A discharger of wastewater to the sanitary sewer which is not sanitary wastewater or is not equivalent to sanitary wastewater in character. Also, a discharger of "Industrial Wastewater" as defined below.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Infiltration and Inflow (I/I)--"Infiltration" means the addition of ground water into a sewer through joints, the sewer pipe material, cracks, and other defects. "Inflow" means the addition of precipitation-caused drainage from roof drains, yard drains, basement drains, street catch basins, etc., into a sewer.

Interference -- A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

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Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal and;

Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent state or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including state regulations contained in any state sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Major Facility--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

Minor Facility--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone--A volume that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in state regulations (Chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the state of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington state permit writers are joint NPDES/State permits issued under both state and federal laws.

Pass through -- A discharge which exits the POTW into waters of the state in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of state water quality standards.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Potential Significant Industrial User--A potential significant industrial user is defined as an Industrial User which does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

- a. Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day or;

b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

The Department may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Publicly Owned Treatment Works (POTW) – A treatment works as defined by section 212 of the Act, which is owned by a State or municipality (as defined by section 502(4) of the Act). This definition includes any devices and systems used in the storage, treatment, recycling, and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes, and other conveyances that convey wastewater to a POTW's treatment plant. The term also means the municipality as defined in section 502(4) of the Act, which has jurisdiction over the Indirect Discharges to and the discharges from such a treatment works.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Significant Industrial User (SIU)--

- 1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;
- 2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

*The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, wetlands, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Maximum Daily Loading (TMDL) – A study conducted to satisfy the requirements of section 303(d)(1)(C) and (D) of the Clean Water Act for quantification and allocation of available pollutant and thermal loadings (respectively) to impaired rivers within the state's boundaries.

Total Suspended Solids (TSS)--Total suspended solids are the particulate materials in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration or mass of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

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APPENDIX C—MIXING ZONE ANALYSES

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found on the Department's homepage at

<http://www.wa.gov/ecology/>

EPA supported mixing zone models can be found at EPA's Center for Environmental Assessment Modeling (CEAM) web site at:

ftp://ftp.epa.gov/epa_ceam/wwwhtml/ceamhome.htm

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Reprinted for Inclusion in Westside Permit Fact Sheet

Mr. Thomas D. Boyer
Assistant City Engineer
Vancouver City Hall
PO Box 1995
Vancouver, WA 98668-1995

Dear Mr. Boyer:

Thank you for meeting with us on January 25, 1999 regarding the mixing zone ratios for the Westside Treatment Plant. As discussed in that meeting, difficult interpretations must be made in applying our regulation since literal interpretation of our regulations when applied to the new Westside diffuser, at least for the acute case, are impossible. Our intentions for the meeting were twofold. First we wanted to ensure that City staff understood the questions we were grappling with in regards to the mixing zone size question, and how to apply the policy that the program had adopted to address such cases. Secondly we wanted to understand the City's concerns and desires with respect to how such an interpretation would impact the City. We appreciate you making the trip to our offices.

We believe that we have succeeded in reaching a fair and defensible position that satisfies the concerns which you presented at the meeting. The mixing zone size that we propose is included in the diagrams attached. You will see that the proposed acute mixing zone matches the mixing zone used in the Engineering Report titled "Engineering Report for Improvements to the Westside Wastewater Treatment Plant for City of Vancouver, Washington" October 1995 (hereafter simply Engineering Report). The chronic mixing zone does not extend as far downstream as the mixing zone presumed in the Engineering Report. However, because the downstream boundary was not the limiting one, the mixing zone ratio at the edge of the chronic mixing zone also remained the same as was estimated in the Engineering Report.

Several factors had significant weight in this decision. First of all, neither the Ecology policy, nor the previously proposed mixing zone boundaries in the draft permit gave serious consideration to the semi-estuary environment into which the West Side Treatment Plant discharges. Our proposed mixing zones both include limits in the cross-river direction as used in the modeling. Consideration of such a situation, and closer scrutiny of the Engineering Report for the outfall improvements led us to determine that the models had purposefully established such a radial symmetry in the cross stream and downstream directions as would be done in an estuary environment, albeit using the more generous freshwater distances. We found this to be appropriate in the acute case, and sufficient justification to extend the acute mixing zone boundary to the dimensions used in that modeling while reducing the zone in the cross stream direction.

As for the chronic mixing zone, the lack of analysis for the high flow situation was a significant consideration. Absent such analysis in the Engineering Report, there was no compelling justification for establishing a downstream boundary from the middle or most downstream port. We found that current modeling tools are also more precisely estimating the impacts of overlapping plumes. If modeling similar to that done for Aberdeen was conducted, it may well justify using the center point of the diffuser array. We are including the requirement to conduct this type of modeling or the results of a dye study with the

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next permit application. The Department will then decide on the basis of the best available information whether to establish the chronic mixing zone from the center point of the diffuser array or the most upstream port in the next permit cycle.

If you have any questions about this issue, the proposed decision, or if your input has not been accurately portrayed, please call me as soon as possible at (360) 407-6277. We are proceeding to integrate this decision into the draft permit at this time.

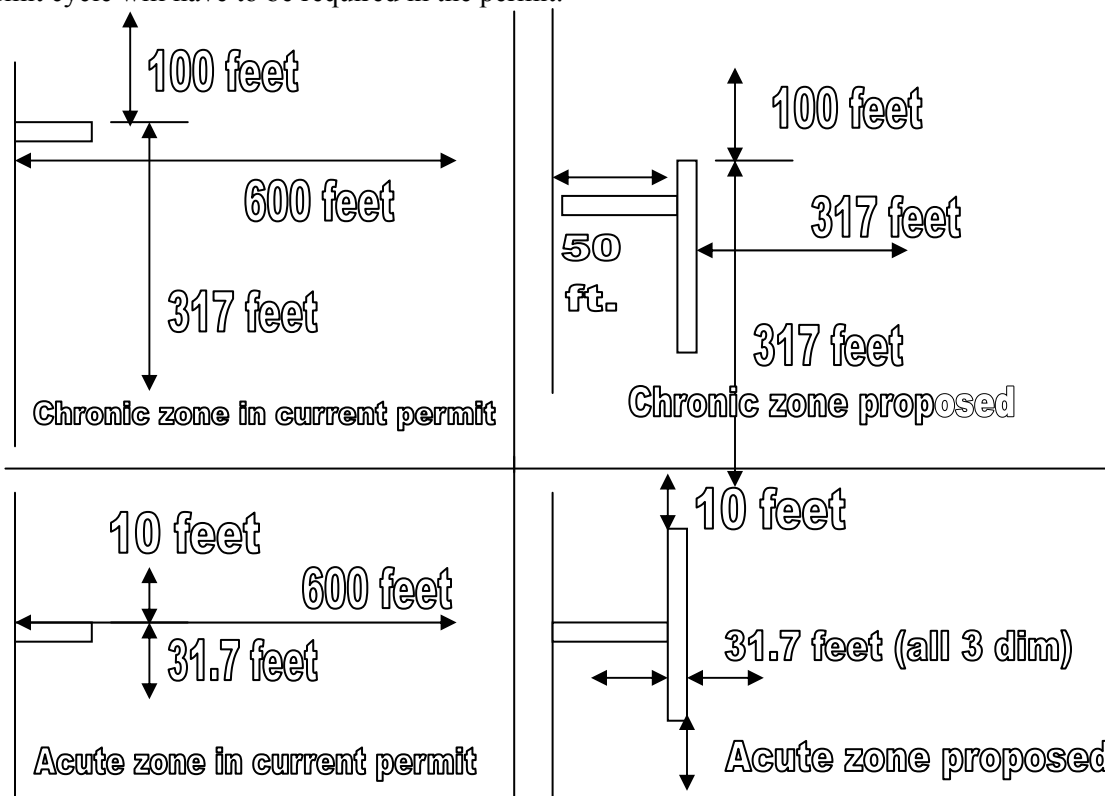
David J. Knight, PE
Environmental Engineer
Municipal Unit, Water Quality Program
Southwest Regional Office

DK:

Enclosure

Enclosure 1: Proposed Mixing Zone Ratios

Impact: There will be no requirement for the POTW to meet ammonia limits if this mixing zone size is adopted. Due to lack of analysis of the impact of overlapping plumes, additional modeling for the next permit cycle will have to be required in the permit.



DRAWINGS FOR CONCEPTUAL BASIS ONLY: NOT TO SCALE

Mixing Zone Ratios from Engineering Report – Adjusted to Above Proposed Boundary in Chronic Case:

FLOW RATE	EFFLU- ENT TEMP	CURRENT SPEED (CM/S)	AMB TEMP C	ACUTE BOUND- ARY	PRESUMED CHRONIC BOUNDARY	PROPOSED CHRONIC BOUNDARY
25.5	21.0	1.0	21	10:1	64:1	64:1
25.5	21.0	14.0	21	18:1	74:1	56:1
67.55	21.0	1.0	21	9:1	59:1	59:1
67.55	21.0	14.0	21	19:1	86:1	64:1
8.0	21.0	1.0	21	17:1	56:1	56:1
8.0	21.0	14.0	21	21:1	87:1	66:1
12.0	21.0	1.0	21	14:1	58:1	58:1
12.0	21.0	14.0	21	19:1	76:1	57:1
Lmiting				9:1	56:1	56:1

APPENDIX D—REASONABLE POTENTIAL ANALYSIS

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Calculation Of Ammonia Concentration and Criteria for fresh water. Based on EPA Quality Criteria for Water (EPA 400/5-86-001) and WAC 173-201A. Revised 1-5-94 (corrected total ammonia criterion). Revised 3/10/95 to calculate chronic criteria in accordance with EPA Memorandum from Heber to WQ Stds Coordinators dated July 30, 1992.

INPUT

1. Ambient Temperature (deg C; $0 < T < 30$)	22.6
2. Ambient pH ($6.5 < \text{pH} < 9.0$)	8.20
3. Acute TCAP (Salmonids present- 20; absent- 25)	20
4. Chronic TCAP (Salmonids present- 15; absent- 20)	15

OUTPUT

1. Intermediate Calculations:	
Acute FT	1.00
Chronic FT	1.41
FPH	1.00
RATIO	14
pKa	9.32
Fraction Of Total Ammonia Present As Un-ionized	7.0642%
2. Un-ionized Ammonia Criteria	
Acute (1-hour) Un-ionized Ammonia Criterion (ug NH ₃ /L)	260.0
Chronic (4-day) Un-ionized Ammonia Criterion (ug NH ₃ /L)	42.0
3. Total Ammonia Criteria:	
Acute Total Ammonia Criterion (mg NH ₃ + NH ₄ /L)	3.7
Chronic Total Ammonia Criterion (mg NH ₃ + NH ₄ /L)	0.6
4. Total Ammonia Criteria expressed as Nitrogen:	
Acute Ammonia Criterion as mg N	3.0
Chronic Ammonia Criterion as N	0.49

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Reasonable Potential Worksheet

Hardness at Acute/Chronic mixing zones:

Parameter	64.00			State Water Quality Standard		Max concentration at edge of...		LIMIT REQ'D?
	Metal Criteria Translator as decimal Acute	Metal Criteria Translator as decimal Chronic	Ambient Concentration in total metal ug/L	Acute ug/L	Chronic ug/L	Acute Mixing Zone ug/L	Chronic Mixing Zone ug/L	
ANTIMONY 7440360 1M	1.00	1.00	0.9000	9000.0000	14.0000	1.14	0.94	NO
ARSENIC (total recoverable) 7440382 2M	1.00	1.00	0.9000	360.0000	190.0000	1.04	0.92	NO
ARSENIC (inorganic)	1.00	1.00		N/A	0.0180			NO
BERYLLIUM 7440417 3M				130.0000	5.3000	0.00	0.00	NO
CADMIUM - 7440439 4M	0.96	0.93	0.0237	2.2823	0.7412	0.06	0.03	NO
Hardness dependent								
CHROMIUM(HEX) 18540299	0.98	0.96	0.3860	15.0000	10.0000	0.77	0.43	NO
COPPER - 744058 6M	1.00	1.00	1.2100	11.1750	7.7519	5.58	1.91	NO
Hardness dependent								
LEAD - 7439921 7M	0.86	0.86	0.2670	39.5992	1.5431	0.62	0.29	NO
Dependent on hardness								
MERCURY 7439976 8M	0.85	1.00	0.0015	2.1000	0.01200	0.02	0.0048	NO
NICKEL - 7440020 9M -	1.00	1.00	0.8100	970.3076	107.7604	1.34	0.89	NO
Dependent on hardness								
SELENIUM 7782492 10M	1.00	1.00		20.0000	5.0000	0.16	0.03	NO
SILVER - 7740224 11M	0.85	NA	0.0100	1.6012	NA	0.27	0.06	NO
dependent on hardness.								
THALLIUM 7440280 12M	1.00	1.00		1400.0000	1.7000	0.16	0.03	NO
				0				
ZINC- 7440666 13M hardness dependent	1.00	1.00	3.2000	78.4119	71.6020	8.92	4.11	NO
Total Ammonia as N			20.0000	3025.3850	488.1616	2168.87	365.35	NO

Organic Pollutants Listed in Permit Application as

Known Present:

CHLOROFORM 67663 11V				28900	6	0.34	0.06	NO
METHYL CHLORIDE 74873				no limit	no limit	0.34	0.06	NO
METHYLENE CHLORIDE 75092 22V				no limit	4.7	5.60	0.90	NO
TRICHLOROETHYLENE 79016 29V				45000.0000	2.7000	0.18	0.03	NO
VINYL CHLORIDE 75014 31V				no limit	2	0.90	0.15	NO
1,4 DICHLOROBENZENE 106467 22B				1120	400	0.18	0.03	NO

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ALDRIN 309002 1P	2.5000	0.00013	0.00	0.00044	YES
HEXACHLOROCYCLOHEXANE-ALPHA 319846 2P	no limit	0.0039	0.00	0.00	NO
DIELDRIN 60571 10P	2.5000	0.00014	0.00	0.00058	YES
HEXACHLOROCYCLOHEXANE-GAMMA (lindane) 58899 4P	2.0000	0.0190	0.01	0.00	NO
BIS(2-ETHYLHEXYL) PHTHALATE 117817 13B	940.0000	1.8000	1.99	0.32	NO

APPENDIX E—NARRATIVE DESCRIPTION OF TREATMENT PROCESSES

(FROM THE CITY’S NPDES PERMIT APPLICATION FOR THIS FACILITY)

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APPENDIX F--RESPONSE TO COMMENTS

Comments on the factual basis of the permit conditions were received from Mr. Tom Boyer on April 16, 1999. The Department incorporated several factual corrections and typographical errors. Two comments were not incorporated as it was determined that these were not factual errors.

The first was the comment that the concentrations of several pollutants were different than appeared in the fact sheet. The values of the fact sheet were taken from the permit application, and the fact sheet notes the source that was used. While new data would show the concentrations to be different, neither the values in the fact sheet or the values provided in the City's comments are high enough to warrant permit limits for these pollutants. Also the source of the proposed corrected data was not clear. It was not determined to be necessary to incorporate this data, and the fact sheet data, cited as being copied from the permit application, was determined to not be in factual error.

The second comment was that the BOD and TSS loading capacities of the new Westside Water Reclamation Facility were higher than noted. The permit fact sheet draws upon the Engineering Report approved by the Department on April 23, 1996. While the Department understands the desire to have a higher rated capacity, the City has not provided, based upon our file review, a revised Engineering Report that shows how the design was modified to accommodate the increases in capacity requested.

Part of the City's justification for considering this a factual error was that the plans and specifications show a higher projected loading for "buildout." Review of the approved Engineering Report shows that the facility was designed to accommodate 2013 flows (tables 3-1 and 3-2), not buildout flows (tables 3-3 and 3-4), and there was a recognition that the headworks would have to be redone by 2008 to accommodate incremental increases in flows prior to 2013. The Department does not accept, as a general rule, that plans and specifications to construct facilities detailed in an Engineering Report alter the design basis, or that in this case there is proper documentation that the facility constructed was appropriately modified to accommodate the 25 percent greater TSS and 20 percent greater BOD loadings requested to be recognized. This was therefore found to not be a factual error.

RESPONSE TO ENTITY COMMENTS DURING THE PUBLIC NOTICE PERIOD: Comments Received August 14, 2001.

The City of Vancouver expressed significant concern in two areas. The first was about the calculation of removal rates for the Marine Park and Westside Treatment Plant (WSTP). These calculations were required because BOD and TSS loadings of the Marine Park facility are reintroduced to the headworks of the WSTP. This practice is allowed as it is a practical transport method, but the influent loadings at the Marine Park facility cannot be again claimed as influent loadings at the WSTP. The City's comments suggest two alternatives:

The City first suggests adding the loadings as measured at the headworks of the Industrial Pretreatment Lagoon to the measured headworks loadings of the WSTP. Our understanding is that both the effluent and removed solids from this lagoon are typically returned to the Westside POTW where they are already counted in the WSTP headworks. Unless the flows from the lagoon are introduced downstream of where the influent samples of the WSTP are collected the requested method of calculating headworks loadings is not appropriate. Otherwise these loadings would be counted twice.

The second suggested alternative is to allow resampling when a noncompliance month occurred. While the desire for an early warning mechanism is understandable, it is not possible to stipulate an enforcement response in a permit. The City's comments reflect concern that noncompliance will occur without the

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City being able to take any action to prevent it. We feel that proper operation of the facilities will prevent noncompliance. We do not recognize the stipulation of this type of response to noncompliance will reduce the incidence of noncompliance.

The City's significant concern is with WET testing requiring two species of fish. This is within the Department's guidelines. These guidelines specify that one or two fish species should be required. The City expressed the opinion that limiting the WET testing to one species of fish will assist in determination of toxins if the tests show further analysis is warranted. The basis for this opinion is not given, and we do not have reason to believe this is the case.

The City had a number of comments on specific permit conditions. These will be addressed by section with the City's comments paraphrased. To:

S1(B) – The City wishes to remove language that reduces the WSTP influent loadings by the amount reintroduced by the Marine Park plant. This wording is included for purposes of calculating compliance with the 85 percent removal requirement. Reintroduction of removed solids from one POTW to be counted again as loadings at the headworks of another POTW is generally prohibited. In this case, adherence to this prohibition would require a dedicated line to be constructed from the Marine Park to the WSTP facilities expressly to pipe solids to a point downstream of where headworks samples are collected. We have agreed that the significant savings to the taxpayers warrants allowing reintroduction of solids back into existing force main that goes to the WSTP headworks. However, this allowance can only be made if the loadings reintroduced by the Marine Park facility are not counted twice. The calculations in permit section S1.B are the best methodology we could devise to reduce the WSTP headworks loading by the amount contributed by the Marine Park facility. This adjusts the headworks loadings at the WSTP to what they would be if a dedicated line was piping the Marine Park solids to the WSTP's solids handling systems. This allow calculation of whether the WSTP complies with the requirement to remove 85 percent of the loadings coming to it. Because loadings to the WSTP now include significant loadings reintroduced from the Marine Park facility, failure to employ this scheme would allow an exception to the 85 percent removal rate requirement. Therefore, this requirement is retained.

S3(A) The City desires until the 20th of the month to report sampling from the previous month. The delivery of sampling results from the previous month by the 15th of the month is the standard that we have set for POTWs, and has been found to be a reasonable requirement. The requirement is met by the vast majority of POTWs in the state. The City's comments do not describe extraordinary circumstances that would make this requirement unduly burdensome for them to meet. Therefore, this requirement to submit monitoring by the 15th is retained. We expect that exceptions to the reporting date of the 15th of the month in other permits will be eliminated at their next renewal unless extraordinary circumstances clearly warrant such an exception.

S4(A) The City believes that the design criteria reflected in the permit are not appropriate. The Department has reviewed the recently submitted request for an increase to the rated BOD and TSS capacity of the WSTP. This request was deficient in that it did not provide an appropriate basis for the requested increase in rated capacity. Therefore the recognized ratings will be retained. We do not anticipate the WSTP to exceed its current rated capacity during the term of this permit. Therefore, the POTW will have ample time to properly document the engineering basis for this request during the coming permit cycle.

S4(B) The City believes that an Operations and Maintenance manual update for the Industrial Pretreatment Lagoon is not required since one was submitted in 1979. During previous Department inspections, the 1979 manual was observed to have been superseded by a newer document, and the Department was not provided a copy of the current O&M manual for review and approval. More than three years have passed since the previous O&M manual was approved, and substantial differences in operation of the facility since 1979 have occurred. Therefore, this requirement is retained.

S5(A) The City wishes the permit to acknowledge that operators are eligible for provisional certification. The assessment that this facility upon initiation of operation was considered to be a Class 4 facility was provided to the City over two years ago. The new facility does involve new processes such as the step feed system that provides required nitrification to the wastewater and the new incinerator as well as significant increases in the numbers of major components. While it is our opinion that the operators in charge should already be at the Class 4 level based on the significant advance notice, the rules for operator certification provide for provisional certification under certain circumstances. We find no compelling reasons to modify or further reinforce that process by language in this permit though. Therefore, the requested wording has not been added to the permit.

S6(A)(1)(a) and S6(A)(2) The City wishes to have the Ordinance date removed from the permit. While the Department finds that this would be advantageous as well, we have been required by EPA rules and guidance to include the date of adoption of the enabling ordinance in order to appropriately enforce requirements to properly implement the Pretreatment Program. When this Ordinance is modified, the Department is required to process a modification to the NPDES permit to recognize the change and new date of the Ordinance. This process is further described in 40 CFR 403.18.

S6(A)(1)(b) The City wishes the Department to replace the words “which may” with “that.” This sentence uses the same exact wording, which formerly appeared in section S8 (A)(1)(c). This has never been the subject of contention with the Department or to our knowledge others. The Department does not concur with the need for this change.

S6(A)(1)(d) and (g) The City wishes for sampling requirements to be reworded. For section (d), the reference to the specific section of 40 CFR part 403.12 will be deleted so that applicability to non CIUs will be preserved. Also, the reference to section 40 CFR part 136 does not need to be reinforced if this modification is made because requirements to use 40 CFR part 136 methods are already included in requirements of other sections of 40 CFR part 403.12. (MODIFICATION) For section (g) the same change will be made for the same reasons. (MODIFICATION)

S6(A)(1)(g) The City believes that the wording “...sample and analyze for all regulated pollutants” could be construed to require a full priority pollutant scan. We believe the wording clearly requires the City to sample for pollutants for which the Industrial User would otherwise be required to sample for and no more. The Department does not concur with the need for changing this wording.

S6(A)(2) The City finds this wording relating to spill plans ambiguous and requests clarification. The city directs attention to Volume 4, section 8 of its approved program and the modifications of 9/28/94 that included an Accidental Spill Prevention Plan (ASPP) form. The Department failed to determine how this requirement is ambiguous, and the wording will be retained.

S6(A)(3)(b) The City requests the permit recognize their ability to use discretion in deciding which chemicals that Industrial Users store to include in spill control plans. The Department has no desire to usurp the City's use of judgement as to what chemicals are of concern with regards to a spill plan, and which are not. However, we do wish spill plans to generally list the chemicals stored at the time the plan is developed so that the City can make informed decisions as to what precautions against slug loads are appropriate. When such plans are reviewed against inspection results, the City can then compare actual chemicals observed to be stored with this list to determine whether the changes warrant updating the spill plan. The wording of paragraphs S6(A)(3)(a)-(d) is verbatim from 40 CFR 403.8(f)(2)(v)(a)-(d) and will be retained.

S6(A)(6) The City requests to delete final permits from the submittals required to be sent to the Department, and in lieu of this have the permit require submittal of draft permits. The Department agrees with the request to delete final permits as reasonable, however we believe it is clear that the City is no longer required to submit either draft or final permits to the Department. We encourage the submittal of draft permits on a voluntary basis where input is desired, but the Department cannot guarantee review of such submittals. In the future, the program's adherence to proper permitting procedures will be evaluated only during pretreatment compliance inspections and audits.

S6(B) – Mercury The City finds the table and footnote are at odds with regards to the mercury monitoring frequency. The City had made the correct presumption as to the intent of this wording, but to make this clearer for the City, the reinforcement of semi-annual mercury monitoring in note 1 is deleted as requested.

S6(B) – Footnote 4 The City recommends striking the phrase “for which periodic monitoring is necessary” to resolve ambiguity. This wording has been deleted for clarity. (MODIFICATION)

S6(B) – Footnote 4 The City believes that the Department was likely desiring organic nitrogen when inorganic nitrogen was required, and if correct desires the wording reflect accordingly. Actually, the monitoring desired is for total inorganic nitrogen as stated.

S6(B) – Footnote 4 The City desires removal of the requirement for sampling salinity. The salinity of the effluent, although not great, can still impact its mixing characteristics. Therefore, data on salinity is necessary for mixing zone modeling, and is required to be collected by this permit.

S6(B) – Footnote 5 The City desires the permit specify that notification by the Department will be written. The request to receive this notification in writing is a reasonable one, and that change has been made. (MODIFICATION)

S8(A) The City desires clarification as to why sampling is required, station description, and sampling methods to use, why orthophosphate and salinity are required, and whether mercury and arsenic are to be dissolved or total recoverable or other. The second paragraph of section S8.A clarifies this for all metals samples except for selenium, mercury, and arsenic. Wording will be added to clarify the form of these metals desired. (MODIFICATION) For arsenic, the table specifies the inorganic form only is required. Sampling methods are not necessarily limited to 40 CFR 136 methods since this sampling is not for determining whether the effluent is in compliance with permit limits. Therefore, the reference to 40 CFR part 136 has been removed. (MODIFICATION) Please refer to the Puget Sound Protocols for station description and other

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particulars of desired ambient monitoring protocols. This is not necessary to include in the permit.

S9(A) The City notes that the date noted has passed, and desires testing within 60 days after the effective date of the permit. The Department concurs. (MODIFICATION)

S9(A)(3) The City believes that WET testing requirements for *Orcorhynchus mykiss* may not be possible, and use of a substitute species would reduce available toxicity data by over 90 percent. The City desires removal or WET testing requirements for *Orcorhynchus mykiss*. The Department routinely requires testing with all three species, and feels strongly that with the ESA implications of the Columbia River, this is vital information to have. This permit condition will not be removed.

S9(B) The City notes that referenced section S1(D) is missing. The reference will be changed to S1.(C). (MODIFICATION)

S10 The City desires the removal or requirements for algae species *Selenastrum Capricornutum*. The Department reviewed this requirement with our WET testing expert who recommended that in this situation, this requirement be retained due to the value of the collection of this data.

S11 The City believes that outfall monitoring frequency of every two years is excessive. The traffic envisioned for the area of this outfall structure make it especially susceptible to damage from ships. Therefore, due to the high flows involved and potential for damage if the outfall structure is disabled, this requirement is being retained.

DEPARTMENT RESPONSES TO COMMENTS ON THE FACT SHEET:

The City noted that the address of the treatment plant has changed from 1800 Kotobuki Way to 2323 W. Mill Plain Boulevard. This change will be noted, and future correspondence sent to the new address.

The City noted that the treatment plant began secondary treatment not simply operation in 1974. Presumably this means that operation prior to this date provided less than secondary treatment. This clarification is noted.

The City wished to add a note that the Andresen Pump Station conveys flows directly to the "Marine Park Water Reclamation Facility." This additional information is noted. Although the Permittee calls this wastewater treatment plant, a 'Reclamation Facility', the treatment plant has not been evaluated to meet the requirements for reliability, redundancy and disinfection within the state's Water Reclamation and Reuse standards, 1997. Meeting these standards is required prior to any distribution or use of reclaimed water. The standards require that a Reclaimed Water Engineering Report be submitted to and approved by the Department of Ecology and the Department of Health (the Departments). Although the Departments cannot regulate the local use of the title "Reclamation Facility," for clarity, all correspondence from the Departments shall refer to the Marine Park Wastewater Treatment Facility until such time as the requirements in the Water Reclamation and Reuse Standards are met.

The City wishes it noted that industrial growth also necessitated the Westside Treatment Plant expansion.

The City wishes it noted that the Westside Treatment Plan now includes the ability to achieve "...complete summertime nitrification with tight operational control." as opposed to "...controlled nitrification of ammonia."

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The City wishes to note the following: That it conducted a pilot land application project with residual solids in August 2000. That results of this have been contributed to a plan to land apply solids as fertilizer. And that the reintroduction of the lagoon solids to the Westside plant is viewed as a contingency plan if land application is not available.

The City wishes to note that the interceptors are now used to divert flows to the Marine Park facility instead of to the Westside facility. Presumably this is in keeping with the recognized upgrade of the Marine Park facility to a 16.0 MGD capacity as a maximum monthly average.

The City wishes it reflected that a higher BOD₅ and TSS capacity exist at the Westside Treatment Plant than this permit and fact sheet recognize. The Department is awaiting the engineering basis for re-rating of this facility to these higher capacities. The recognition of higher capacities will not be part of this permitting action.

The City wishes it reflected that the pollutants antimony, thallium, and methyl chloride which the fact sheet lists as reported present were reported below the detection levels. Also, that Hexachlorocyclohexane-alpha and hexachlorocyclohehane (presumably the City is referring to hexachlorocyclohexane) were not tested. These pollutants are listed in the fact sheet as previously reported present.

The City added the comment, with regards to Whole Effluent Toxicity (WET) testing, that it wishes to know the criteria to be used in determining when additional effluent characterizations will be required by the Department. The Department staff will use best professional judgement in making such determinations.

The City wishes it clarified that the shifting to a non-nitrifying mode of operation during winter months would not be considered a process change that could increase effluent toxicity, and thereby wishes the fact sheet to exempt this operational change from potentially triggering additional WET testing. The Department can not provide this exemption.